

In spite of such minor defects, which are of importance only to the student whose knowledge is not general enough to guard against them, this part, like its predecessor, must take a high rank among the books destined to advance the knowledge of living organisms. This it will do, not only by making more available an immense mass of important data, and pointing out the source of others, but still more effectively by its suggestiveness as to profitable direction for experimentation.—C. R. B.

The principles of agriculture.

THE authors of books written in illustration and aid of agriculture may be roughly grouped into three classes. First, those who, unacquainted with science, are adepts in practice and have faithfully described their own methods, together with the usages of others who have successfully followed some branch of the business of farming; second, those who have written from the standpoint of pure science; and third, those who combine a practical knowledge of agriculture³ with a thorough knowledge of the sciences with which the art is intimately related and upon which the best practice chiefly depends.

Professor Bailey belongs to the latter class and his qualifications for writing or editing a text-book treating of the "principles of agriculture" are by no means slender.

Will the book edited and largely written by him, meet the needs of those for whom it is designed? Let us consider.

The general arrangement or plan of the book is excellent. It begins with an appropriate introduction, which defines agriculture and its main subdivisions, discusses the personal factors upon which success depends, and shows the relation of the natural sciences to this great industrial art.

The main body of the book is divided into three parts, viz.: The soil; the plant, and crops; the animal and stock. The six chapters into which part one is divided are written by four different men. Part two has three different authors, and part three has four.

Those who have assisted Professor Bailey in the preparation of this work are his colleagues or associates in Cornell University as follows: I. P. Roberts, James Law, H. H. Wing, John W. Spencer, L. A. Clinton, G. W. Cavanaugh, and B. M. Duggar.

In addition to its logical arrangement the book has the merit of being written in language that few can fail to understand. The use of terms unfamiliar to the general ear has been avoided, and there are few paragraphs which will not be readily and fully understood by the average school boy of fifteen or sixteen years.

³BAILEY, L. H., *et al.*: The principles of agriculture. A text-book for schools and rural societies. 12mo. pp. 300. Illustrated. New York: The Macmillan Company, 1899. \$1.25.

If the book has any weakness it is that it attempts too much. It presents such a vast array of principles, in so brief or concentrated a form, that there is danger of cloying the appetite, or producing mental dyspepsia. Some of the principles named are axiomatic and it seems scarcely necessary to repeat so much self-evident truth. In some cases non-essentials are emphasized and essentials are passed over slightly. By restricting the number of topics, and elucidating the more important principles, the probability of treating them to the average student's profit would be greatly increased.

A book treating of the principles of agriculture can scarcely be called complete which has nothing to say about exchange and distribution. If farming is a business, the machinery whereby the farmer converts into money, or other values, that portion of his products which is not consumed on his farm, and the principles concerned in such exchange, are nearly as important as those concerned in mere production.

It seldom happens that a book which is the joint product of so many different contributors possesses such a clear, vigorous and attractive style throughout as does this one. Scholarship and training are evident in every chapter.

If this book could be placed in the hands of each earnest young farmer, it could scarcely fail to give him a broader, truer conception of what farming really is, and would teach him that thought and study, observation and reflection are just as essential and serviceable upon the farm as elsewhere.

To all those who are resolved to be good farmers we commend this volume, because no man in this age can be a thoroughly good farmer without the knowledge which can be more easily and rapidly acquired here than elsewhere.—W. R. LAZENBY.

MINOR NOTICES.

THE "NEW EDITION" of Hansen's *Pflanzenphysiologie*, bearing date of 1898, seems to be only a re-issue of that well and favorably known book.⁴ It was primarily intended for that large circle of readers who are chiefly interested in some other field of science, but wish to have simple, accurate, and concise information concerning the fundamental facts and principles of plant life. This mission it fulfilled well. It would be wise to have the progress which has been made since 1890 embodied in a thoroughly revised edition. To those who do not already know and use the original edition, we commend it as presenting many points in a clear and interesting fashion, with happy citation of examples.—C. R. B.

THE SATISFACTORY reception which has been given to Russell's *Dairy*

⁴ HANSEN, ADOLPH: *Pflanzenphysiologie. Die Lebenserscheinung und Lebensbedingungen der Pflanzen. Neue Ausgabe.* 8vo. pp. viii + 314. *figs.* 160. Giessen: J. Ricker'sche Buchhandlung. 1898.